(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 247 715**
A1

(12) # EUROPEAN PATENT APPLICATION

(21) Application number: 87303061.3

(51) Int. Cl.⁴: **A44C 5/10**

(22) Date of filing: 08.04.87

(30) Priority: 12.05.86 JP 70841/86 U

(43) Date of publication of application:
02.12.87 Bulletin 87/49

(84) Designated Contracting States:
CH DE FR GB LI

(71) Applicant: HATTORI SEIKO CO. LTD
5-11 Ginza 4-chome Chuo-ku
Tokyo(JP)

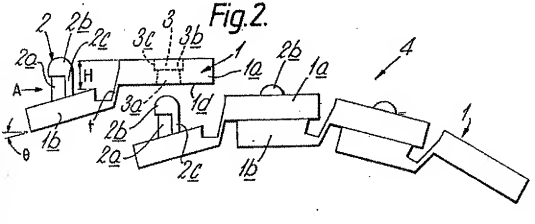
(72) Inventor: Yamaura, Junichi Shiojiri Kogyo K. K.
Shiojiricho 398 Ohaza
Shiojiri-shi Nagano-ken(JP)

(74) Representative: Miller, Joseph et al
J. MILLER & CO. Lincoln House 296-302 High Holborn
London WC1V 7JH(GB)

(54) **Watch band.**

(57) A watch band (4) having a plurality of separate parts (1) which are linked successively to each other characterised in that each said part (1) is provided with at least one hole (3) and at least one projection (2), each said projection (2) being mounted in and retained or releasably retained in a said hole (3) in an adjacent part (1).

Fig.2.



EP 0 247 715 A1

"WATCH BAND"

This invention concerns a watch band and, although the invention is not so restricted, it relates more particularly to a watch band made of a plastics material.

Watch bands known to the Applicants which have been made from plastics material have involved injection moulding an elastomer such, for example, as an urethane resin. Such watch bands have therefore provided little scope for design variations by way of variations in colour because it has been necessary to make the entire watch band in one single colour. Furthermore, the design of projections and recesses in the watch band has had to be limited to those which could be formed by injection moulding.

According therefore to the present invention, there is provided a watch band having a plurality of separate parts which are linked successively to each other characterised in that each said part is provided with at least one hole and at least one projection, each said projection being mounted in and retained or releasably retained in a said hole in an adjacent part.

Thus, in contrast to previous suggestions, a watch band according to the present invention permits wide variations in design.

Each said part is preferably made of a flexible material such, for example, as a polyacetal resin.

Each said part may have a first portion provided with the hole or holes and a second portion provided with the projection or projections, the first and second portions being spaced from each other.

The first and second portions are preferably interconnected by a third portion whose thickness is substantially less than that of either of the first and second portions.

The first and second portions may be vertically offset with respect to each other, e.g. by a distance which is at least as great as the thickness of the first portion.

Moreover, the first and second portions may be planar members which are at an angle to each other.

Each projection may have a head which projects outwardly of a stem portion of the projection, each hole having a constricted portion such that the head of the respective projection may be forced through the constricted portion to a position in which it is retained by the latter. Thus, each projection may have an undercut portion which provides the projection with its stem portion, the undercut portion having been formed by a component of a sliding mould.

The invention also comprises a watch band part for use in a watch band as set forth above, characterised in that the said part is provided with at least one hole and with at least one projection which may be introduced into and retained in a hole of a like part.

The invention is illustrated, merely by way of example, in the accompanying drawings, in which:-

Figure 1 is a perspective view of a watch band part forming part of a watch band according to the present invention,

Figure 2 is a side elevational view of a watch band made up of parts as shown in Figure 1,

Figure 3(a) is a plan view of a projection forming part of the watch band part of Figure 1, and

Figure 3(b) is a plan view of a hole in the watch band part shown in Figure 1.

Referring to the drawings, a watch band 4 is made up of a plurality of separate parts 1 which are linked successively to each other, each of the separate parts 1 being similar to the others. Each of the separate parts 1 is made of flexible material. Thus each part 1 may be an integral moulding of a hard plastics material such, for example, as a polyacetal resin which will have suitable flexibility for use in a watch band.

Each of the separate parts 1 has a first planar portion or upper portion 1a which is provided with three holes 3 which are aligned with each other and which extend completely through the first planar portion 1a. Each of the parts 1 also has a second planar portion, or lower portion, 1b each of which is provided with three projections 2. Each projection 2 is mounted in and retained in, or releasably retained in, a hole 3 in an adjacent part 1, as will be appreciated from what is shown in Figure 2. The first and second planar portions 1a, 1b are interconnected by a third portion 1c whose thickness t is substantially less than that of either the first planar portion 1a or the second planar portion 1b. Moreover, the first and second planar portions 1a, 1b are vertically offset from each other by a distance H which is at least as great (or, as shown in Figure 2, is greater than) the thickness of the first planar portion 1a. Furthermore, the first and second planar portions 1a, 1b are at an angle θ to each other. Thus the arrangement is such that each successive part 1 is tangential to a common circle corresponding to the wrist of a user, while the provision of the third portion 1c, which is very thin relative to the first and second planar portions 1a, 1b, enables these two planar portions 1a, 1b effectively to be hinged to each other even if the

part 1 is made of a hard plastics material such as, for example, a polyacetal resin. Even in that case, the watch band will have the necessary degree of flexibility for its purpose.

Furthermore, the fact that the first and second planar portions 1a, 1b are vertically offset from each other by the distance H and that they are angularly offset from each other by the angle θ, enables the watch band to be made of substantially uniform radial thickness throughout most of the width, and enables it to be curved to a suitable degree even prior to being put on the wrist of a user.

Each of the projections 2 of each of the parts 1 has a head 2b which projects outwardly of a stem portion 2c of the projection 2, the stem portion 2c being provided by reason of providing the projection 2 with an undercut portion 2 a. The undercut portion 2a extends from the second planar portion 1b and throughout substantially two-thirds of the height of a hole 3. The undercut portion 2a is preferably formed by a component of a sliding mould (not shown) which may slide in the direction A.

Each head 2b has a part-spherical shape to assist its introduction into the respective hole 3. As indicated in Figure 2, the head 2b is forced from below into the respective hole 3.

Each hole 3, as will be seen from Figure 2, is a through-hole and has three portions 3a, 3b and 3 c. The lowermost portion 3a is frusto-conical in shape and tapers upwardly, the diameter of the portion 3a adjacent the lower surface 1d of the planar portion 1a being equal to or slightly greater than the maximum diameter of the part-spherical head 2b. This enables the head 2b to be readily introduced into the portion 3a.

As best seen in Figure 3(b), the middle portion 3b of the hole 3 has a cut-away circular shape such that the diameter of the cut-away portion is a little greater than the minimum diameter of the undercut portion 2a of the projection 2. The upper portion 3c of each hole 3 has a circular shape in cross-section, the diameter of the portion 3c being somewhat greater than the maximum diameter of the part-spherical head 2b.

Consequently, when the head 2b of a projection 2 is introduced from below into the portion 3a of the hole 3, it can be forced through the constriction provided by the portion 3b with its partially cut-away circular shape so that thereafter the head 2b is located in the portion 3c and is normally prevented by the portion 3b from being pulled back through the hole 3. Nevertheless, the material of the part 1 may be such as to permit withdrawal of the head 2b from the hole 3 if a sufficiently strong pull on the projection 2 is effected.

As will be seen from Figure 2, when the first planar portion 1a of one part 1 is seated on the second planar portion 1b of an adjacent part 1, the head 2b protrudes above the upper surface of the first planar portion 1a. In this position, the undercut portion 2a of the projection 2 and the cut-away circular shape of the portion 3b of the hole 3 are in engagement with each other with an interference which is produced by the difference in their respective diameters.

As will be appreciated, the provision of the undercut portion 2a of each projection 2 facilitates the assembly and disassembly of the projection 2 in the hole 3.

The watch band of the present invention may be constituted by parts 1 whose colours differ from each other and this permits considerable variation in the design of the watch band. Thus each part 1 may have a different colour from any of the other parts 1. The construction of the present invention, indeed, permits considerable variation in design.

Although the part 1 is shown in the drawings as having three holes 3 and three projections 2, the shape and the number of the projections 2 and of the holes 3 can be varied considerably and this too permits a wide variety of different designs to be adopted.

The watch band of the present invention is thus particularly suitable for use with parts made of plastics material and thus permits a ready change in the colours and shades of colour that can be given to the various parts 1 and the shape and the number of the projections 2 and holes 3. Thus watch bands of designs which have never existed previously can readily be obtained.

The adjustment of the length of the band to the wrist of the user can also readily be effected by increasing or decreasing the number of parts 1 which are to be connected together.

Claims

1. A watch band (4) having a plurality of separate parts (1) which are linked successively to each other characterised in that each said part (1) is provided with at least one hole (3) and at least one projection (2), each said projection (2) being mounted in and retained or releasably retained in a said hole (3) in an adjacent part (1).

2. A watch band as claimed in claim 1 characterised in that each said part (1) is made of flexible material.

3. A watch band as claimed in claim 1 or 2 characterised in that each said part (1) has a first portion (1a) provided with the hole or holes (3) and

a second portion (1b) provided with the projection or projections (1 b), the first and second portions (1a, 1b) being spaced from each other.

4. A watch band as claimed in claim 3 characterised in that the first and second portions (1a, 1b) are interconnected by a third portion (1c) whose thickness (t) is substantially less than that of either of the first and second portions (1a, 1b).

5 A watch band as claimed in claim 3 or 4 characterised in that the first and second portions (1a, 1b) are vertically offset with respect to each other.

6. A watch band as claimed in claim 5 characterised in that the first and second portions (1a, 1b) are vertically offset from each other by a distance (H) which is at least as great as the thickness of the first portion (1a).

7. A watch band as claimed in any of claims 3-6 characterised in that the first and second portions (1a, 1b) are planar members which are at an angle (θ) to each other.

8. A watch band as claimed in any preceding claim characterised in that each projection (2) has a head (2b) which projects outwardly of a stem portion (2c) of the projection (2), each hole (3) having a constricted portion (3b) such that the head (2b) of the respective projection (2) may be forced through the constricted portion (3b) to a position in which it is retained by the latter.

9. A watch band as claimed in claim 8 characterised in that each projection (2) has an undercut portion (2a) which provides the projection (2) with its stem portion (2c), the undercut portion having been formed by a component of a sliding mould.

10. A watch band part for use in a watch band as claimed in any preceding claim characterised in that the said part (1) is provided with at least one hole (3) and with at least one projection (2) which may be introduced into and retained or releasably retained in a hole (3) of a like part (1).

11. A watch band made of a plastics material, characterized in that band pieces (1) each having an engaging projection (2) and an engaging hole (3) are linked successively to each other to form a band body.

Fig.1.

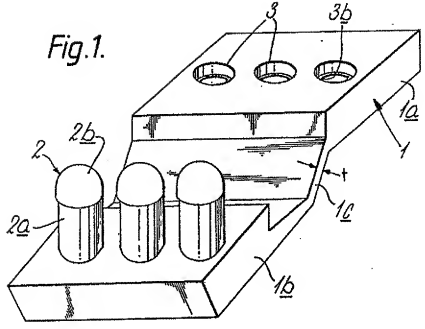


Fig.2.

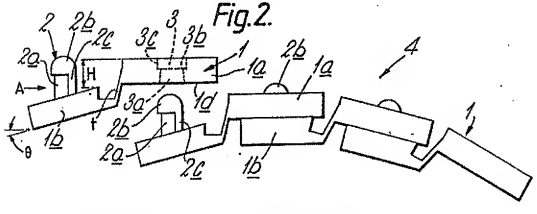


Fig.3(a).

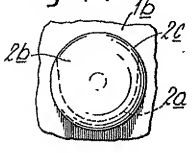
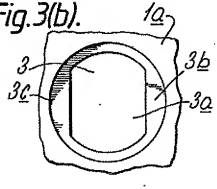


Fig.3(b).



European Patent Office

EUROPEAN SEARCH REPORT

Application number

EP 87 30 3061

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
E	EP-A-0 217 465 (J. LASSALE S.A.) * Whole document *	1-3,5-7,10,11	A 44 C 5/10
X	GB-A- 882 948 (SHALLWIN LTD) * Page 1, lines 8-49,62-87; claims; figures *	1,2,8,10,11	
X	GB-A- 814 329 (W. BURFORD) * Page 1, lines 16-70; page 2, lines 10-128; figures *	1-3,8,10,11	
A		4	TECHNICAL FIELDS SEARCHED (Int. Cl.4)
A	DE-A-2 254 352 (K. LORBER) * Page 5, paragraphs 4,5; pages 6,7; figures *	8,9	A 44 C A 44 B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	28-07-1987	GARNIER F.M.A.C.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO Form 1503 03.82